



APPLIED FORESTRY NOTES

NORTHERN ROCKY MOUNTAIN
FOREST AND RANGE EXPERIMENT STATION
AND
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OVERGRAZING REDUCES CATTLE GAINS AND INCREASES PRODUCTION COSTS

By

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Nothing is more vital to the range livestock grower to-day than the problem of reducing production costs below the present and prospective selling prices. A project, Management of Short Grass Ranges, started by the U. S. Forest Service at Miles City two years ago in co-operation with the Bureau of Animal Industry and the Montana Agricultural Experiment Station, has already yielded preliminary data of interest to range users seeking ways of reducing production costs. The following table shows how three lots of cattle, each with 20 young purebred Hereford cows of uniform age, breeding and conformation and of almost equal weight in the beginning, responded to different grazing intensities. The cows spend alternate periods of six months on adjacent sets of carefully controlled winter and summer pastures. The size of the pastures is such that Lot 1 overgrazes its range, Lot 2 uses its range with moderation, normally leaving a substantial amount of less choice forage, while Lot 3 grazes lightly and leaves about 25% of even the better forage plants.

Table 1. Influence of Grazing Intensity on Cattle Weights and Range Costs

Grazing intensity	Acres per cow year-long	Av.Wt.of 1933 Calves°			Cows av. gain or loss July 1932 to Nov. 1933	Av. lbs. produced cow plus calf in 1½ years	Range costs per lb. gain @ 15¢ per A.°°
		At birth April May	At weaning Oct.18 1933	Pro-rated to 20 cows			
Over-grazed Lot 1	23.1	(18) 69.4	(18) 295.3	264.0	-6.4	257.6	1.34¢
Moderately grazed Lot 2	30.5	(20) 73.3	(19) 319.0	303.0	69.3	372.3	1.22¢
Lightly grazed Lot 3	38.8	(17) 72.9	(17) 324.1	275.5	91.5	367.0	1.58¢
Average Lots 2 and 3	34.6	(37) 73.1	(36) 321.4	289.2	80.4	369.6	1.40¢

° Number of calves per lot given in parenthesis.

°° Range costs are for 1½ years at 10 cents per acre, per year.

Only the range cost is included in the last column above, as other costs were the same for all lots. These range costs of 10 cents per acre per year, or 15 cents for the 1½ years of the test, are slightly above the present average lease price, exclusive of fencing costs, for range in the Miles City region. This 15 cents is, however, substantially below the cost of grazing based on taxes and interest alone of such privately owned grazing land purchased at a price of \$2 or more per acre.

After paying 15 cents per acre for the extra range used by cows of Lot 2 their average weight gain of 372.3 pounds is, at 4 cents per pound, worth \$3.48 more on a per head basis than the 257.6 pounds gain of cows on overgrazed range in Lot 1 during a period of 1½ years. This is equivalent to \$2.32 a year for each cow. Very significant also is the fact that the cost for range alone was 1.22 cents per pound, or nearly 10% less than for the cows on overgrazed range that gained 114.7 pounds less than those in Lot 2.

This increase in production cost is doubly significant from the fact that it was recorded before any perceptible range deterioration resulted from two seasons of overgrazing, starting with range in practically virgin condition. This 10% difference in cost of gains promises to increase under continued overgrazing.

It will also be noted that the average for Lots 2 and 3 combined, with 34.6 acres per head gave a range cost of 1.40 cents per pound of gain which is very slightly more than the cost of 1.34 cents per pound when only 23.1 acres per head was allowed. Is the added stability and feed insurance represented by the extra 10.5 acres per head worth the slightly increased cost? The results of emergencies during such drought years as 1919, 1931, 1934 and others provide an emphatic affirmative answer. The extra expense of providing 38.8 acres per head, as in Lot 3, seems at this stage of the experiment to be unwarranted. Probably 33 to 36 acres of such range per head will prove to be about the right balance, costs and stability considered.

Data on the first crop of calves for these 60 cows, consisting of 56 live calves born, with 54 left at weaning time in October 1933, are given in Table 1. These same cows had a total of 45 live calves in April and May, 1934. The percentage by lots is, Lot 1, 60%, Lot 2, 95%, Lot 3, 70%, or an average of 82½% for Lots 2 and 3. The 1934 calves from Lots 2 and 3 average 76.0 pounds at birth, as against an average of 66.8 for those from overgrazed range, an advantage of 9.2 pounds for the former. The 3.7 pound birth weight advantage for the 1933 calves spread to 28.1 pounds by October. It remains to be seen what the 9.2 spread of this year's calves will amount to by weaning time.

The relatively undamaged range of Lot 1 after only 2 years of overgrazing, as compared to seriously depleted condition of most overgrazed ranges, is still very outstanding. This, together with the fact that the same care and the same amount of supplemental winter hay was given uniformly to all lots, has excluded from the above results part of the higher costs and the normally greater risk of wintering thin cows on the average overgrazed range. Some preliminary attempt to evaluate this greater cost and hazard, deliberately excluded so far by the plan of this experiment, seems warranted at this point, even though data is not complete.

Thrifty breeding cows normally require not more than 750 pounds of hay per head for wintering during a total 40 to 50 days in the windswept Northern Great Plains Region, provided they are placed on fresh range late in the fall, as the above cows have been. This estimate is double the average feeding period of 22 days and two and one-half times the average of 300 pounds of hay provided as the only supplemental feed to all the above cows alike during the winters of 1932-33 and 1933-34. The first of these winters was nearly normal for severity, but the last one was unusually mild.

With a light allowance of hay and a liberal allowance of relatively cheap range forage, as provided in this experiment, the average cost of hay at \$8 per ton, using 750 pounds per head, is \$3. Experience has shown that at least 1500 pounds of hay worth \$6 at the above price, is needed on the average for wintering cattle in the Miles City region on overgrazed range where winter forage is scanty. This difference of \$3 per head for hay is the price paid to avoid an expenditure of 50 cents to \$1 per head for $7\frac{1}{2}$ to 10 acres of additional range at prevailing lease prices. Thus, a saving in wintering costs of at least \$2 per head may be had by a better balance of range and hay. This practice of substituting expensive hay, or other harvested feed, for cheap range forage, has unnecessarily increased range production costs. Correction of this practice by lighter grazing of the range and using less hay will greatly reduce production costs without unnecessary risks, provided a surplus of stored feed is available for the unusual winter.

Summing up then the extra value of weight gains of \$2.32 per head plus a possible \$2 saving in wintering costs when no weight gains for mature cows are expected, gives a possible margin of \$4.32 per head to gain by conservative grazing over overgrazing the range. Full use of this possible margin may prove necessary in order to get profitable production under prospective low market prices.

Overgrazing then reduces the calf crop, increases the cost of weight gains at market time and increases wintering costs. It also tends toward overproduction and financial instability during drought or other emergencies. Conservative grazing, on the other hand, largely avoids these difficulties and has the additional merit of preserving range resources.